Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GIOVANNI TREVISAN

Appeal No. 2001-2140
Application No. 09/217,484

ON BRIEF

Before ABRAMS, McQUADE and NASE, Administrative Patent Judges.

McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Giovanni Trevisan appeals from the final rejection of claims 6 through 8, all of the claims pending in the application.

THE INVENTION

The invention relates to a valve actuator of the piston-rack-pinion type having a mechanism for readily adjusting the

inward displacement of the pistons. Representative claim 6 reads as follows:

> 6. A device for adjusting a central position of pistons and, accordingly, an angular position of a pinion in valve controlling actuators comprising a tubular body, in which first and second pistons are tightly slidably arranged, said first and second pistons being provided with opposite racks meshing with a central pinion, said central pinion being adapted to turn through discrete angles, said device further comprising limiting means, accessible from an outside of said tubular body, for limiting the displacement of one of said pistons toward said pinion, wherein said limiting means comprise first limit means for limiting an inward displacement of one of said pistons, said first limit means including a stem having an unthreaded portion tightly passing via a gasket through said one piston and an adjoining threaded portion which can be engaged in a threaded seat formed in a recess of a head of the actuator, said unthreaded portion being provided with an enlarged head portion which can abut against an inner surface of said one piston.[1]

THE PRIOR ART

The references relied on by the examiner to support the final rejection are:

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[1] Given the context of claim 1, the reference in its preamble to "valve controlling actuators" should instead be to --a valve controlling actuator--. Also, the recitation in claim 8 that "said limiting means," defined in parent claim 6 as being a means for limiting piston displacement "toward" the pinion, further comprises a second limit means for limiting "outward" piston displacement is inconsistent with the underlying disclosure which indicates that the means for respectively limiting inward (toward the pinion) and outward piston displacement are separate and distinct structures.

Looney	3,148,595	Sep. 15, 1964
Nordlund	4,564,169	Jan. 14, 1986
Messina	4,949,936	Aug. 21, 1990

THE REJECTION

Claims 6 through 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Messina in view of Nordlund and Looney.

Attention is directed to the appellant's brief (Paper No. 10) and to the examiner's answer (Paper No. 11) for the respective positions of the appellant and the examiner with regard to the merits of this rejection.

DISCUSSION

Messina, the examiner's primary reference, discloses a valve actuator 1 comprising a tubular body 2 closed at its ends by a pair of heads, two pistons 4 and 5 respectively bearing toothed portions, i.e., racks, 20 and 21, and a pinion gear 22, these elements being arranged as best shown in Figure 2. The actuator also includes "end of stroke elements which can be directly adjusted from the outside of the body 2 and directly engage, by contact, with the pistons" (column 2, lines 36 through 38). In Messina's words,

> [s]aid end of stroke elements, as is clearly shown in FIG. 2, are provided with a first stem 30 which engages with the head . . .; this threaded stem 30 engaging, by contact, with the first piston 4 and operates as an abutment member for the displacement in a first direction of this first piston.
>
> . . .
>
> . . . [T]he other piston 5 is provided with a cap bush 35 which is restrained on said piston 5 and engages with a second threaded stem 36 coupled to the other head . . . and provided with an enlarged head portion 38 which butt engages with an annular narrowed portion 39 formed at the end of the bush.
>
> Thus the head portion 38 of the second stem will operate as a stop element for the displacement of the piston in the opposite direction to the direction in which the stem 30 operates as a stop member for the first piston.
>
> It should be moreover be pointed out that the cap bush 35 is tightly coupled to the piston 5 and that, advantageously, said cap bush is provided with a closing plug [40] at that portion of the bush facing the toothed [pinion].
>
> A micrometric adjusting can be carried out by means of nuts, indicated at 50, which allow for the stems to be properly arranged so as to cause the pistons to perform the desired stroke before the operation of said stems as end of stroke element[s].
>
> On the two stems, moreover, there is provided a respective locking nut, indicated at 51 [column 2, line 39, through column 3, line 4].

As acknowledged by the examiner (see pages 3 and 4 in the answer), Messina's valve actuator does not respond to the limitations in independent claim 6 requiring the first limit means for limiting inward piston displacement to include a stem having an unthreaded portion tightly passing via a gasket

through one piston, or the related limitations in the claim requiring the threaded portion of the stem to be engaged in a threaded seat formed in a recess of a head.

Nordlund discloses a valve actuator 1 generally similar to that disclosed by Messina. In the Nordlund actuator, one of the conventional end-walls or heads is replaced by the end-wall 3 of an auxiliary actuator 19 having a cylinder 20, a piston 21 and a piston rod 22 which can be extended through a bore 3a in the end-wall 3 to limit the outward stroke of the actuator's main pistons. As shown in Nordlund's drawing figures, the auxiliary piston rod 22 is unthreaded and tightly passes through the end-wall 3 via a gasket.

In proposing to combine Messina and Nordlund, the examiner concludes that it would have been obvious to one of ordinary skill in the art

> to make a part of Messina's stem 36 unthreaded, that part which moves along piston 35, and to add a gasket to that area of piston 35, both features shown by Nordlund, to prevent fluid leakage . . . as it is well known in the fluid handling art to make connections which prevent leakage. Additional motivation would be to minimize wear to the [Messina] piston 5 and 35 and the stem 36 as threads would cause significant wear to both pieces [answer, pages 3 and 4].

The examiner's position here is unsound for a number of reasons. To begin with, Messina's clear differentiation between cap bush 35 and piston 5 belies any notion that the cap bush constitutes a piston through which stem 36 passes as required by claim 6. Furthermore, the rationale advanced by the examiner to justify the proposed modification of Messina in view of Nordlund has no basis in fact. More particularly, there is nothing in either reference which indicates that fluid leakage between Messina's cap bush 35 and threaded stem 36 poses a problem, or that the structural relationship between the cap bush and threaded stem results in undue wear. Indeed, Messina's provision of plug 40 to close off the inner end of cap bush 35 seemingly would prevent any such fluid leakage and obviate the need for a structural relationship between the cap bush and threaded stem which might cause wear. In actuality, the construction of Nordlund's piston rod 22 has little, if any, practical relevance to the construction of Messina's threaded stem 36. The only reason to selectively combine these features in the manner proposed by the examiner stems from impermissible hindsight knowledge. Moreover, this fundamental flaw in the Messina-Nordlund combination finds no

cure in the examiner's application of Looney to rectify the admitted failure of Messina to respond to the recess limitation in claim 6.

For these reasons, the combined teachings of Messina, Nordlund and Looney do not justify the examiner's conclusion that the differences between the subject matter recited in claim 6 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

Hence, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claim 6, or claims 7 and 8 which depend therefrom, as being unpatentable over Messina in view of Nordlund and Looney.

SUMMARY

The decision of the examiner to reject claims 6 through 8 is reversed.

REVERSED

NEAL E. ABRAMS Administrative Patent Judge	)	
JOHN P. McQUADE Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JEFFREY V. NASE Administrative Patent Judge	)	

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REVERSED

June 14, 2002